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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/875,197	06/07/2001	Joon-Young Yang	8733.132.20	8761

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EXAMINER

RAO, SHRINIVAS H

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 05/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/875,197

Applicant(s)

YANG, JOON-YOUNG

Examiner

Steven H. Rao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 41-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 41-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/286,564.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

Receipt is acknowledged of paper submitted under 37 CFR 1.114 claiming continuation from U.S. Serial No. 09/875,197 filed on March 04, 2003 which itself claims priority under 35 U.S.C. 119(a)-(d), from Korean Patent Application No. 98-122205 filed April 07, 1998 which papers have been placed of record in the file.

Request For Continued Examination Application

The request filed on 03/04/2003 for a Request for Continued Prosecution Application (RCE) under 37 CFR 1.114 based on parent Application No. 09/875,197 is acceptable and a RCE has been established. An action on the RCE follows.

Preliminary Amendment Status

Acknowledgment is made of entry of preliminary amendment filed 03/04 /03 which was entered on March 07, 2003 therefore claims 41 to 56 as recited in the amendment are currently pending in the application.

Specification

Drawings

The drawings filed on June 07, 2001 have been objected to by the drafts person for reasons stated in the enclosed PTO-948.

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Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 41-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over

With respect to claim 41 Yamaguchi describes a method of fabricating a thin film transistor, comprising: forming a gate insulating layer on an active layer (Yamaguchi fig. 1B # 13, col. 8 line 2 and fig. 1C # 14); forming a gate on the gate insulating layer; forming an excited region in an exposed portion of the active layer by implanting hydrogen ions to the active layer by using the gate as a mask (figs. 1 C and A); and forming an impurity region by heavily implanting impurity ions to said excited region while the excited region remains in an excited state, (Fig. 1 C implanting P⁺ ions).

It is noted that Yamaguchi discloses the use of active layer as a mask and implanting prior to the formation of the gate. However it would be an obvious altering of

the sequence of steps to implant the H after gate formation. Further as Applicants' claims use the terminology " comprising" the claim includes steps in any sequence .

wherein the activation of said impurity ions implanted heavily occurs as the step of said implanting impurity ions is performed. (Yamaguchi col. 8 lines 24-25).

With respect to claim 42 Yamaguchi describes the method of claim 41, wherein the gate insulating layer is formed by depositing silicon dioxide or silicon nitride on a glass substrate. (Yamaguchi col. 8 line 2).

With respect to claim 43 Yamaguchi describes t he method of claim 41, wherein the active layer is formed by depositing undoped polycrystalline silicon. (Yamaguchi col. 7 line 50).

With respect to claim 44 , Yamaguchi describes the method of claim 43, wherein the undoped polycrystalline silicon has a thickness of between about 400 and 800 A. (Yamaguchi col. 7 line 47).

With respect to claim 45 Yamaguchi describes the method of claim 43, wherein the active layer is formed using chemical vapor deposition process. (Yamaguchi col. 7 line 48)

With respect to claim 46 Yamaguchi describes the method of claim 41, wherein the active layer is formed by depositing amorphous silicon and crystallizing the amorphous silicon by laser annealing. (Yamaguchi col. 7 lines 46-51).

With respect to claim 47, Yamaguchi describes the method of claim 41, wherein the exposed portion of the active layer is formed by the steps of depositing an another layer of silicon dioxide on the gate insulating layer to cover the active layer; depositing a

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conductive material on the another layer of silicon dioxide; and patterning the conductive material and the another layer of silicon dioxide to form an insulating layer and to form the gate over a selected portion of the active layer. (Yamaguchi Fig. 3 E).

With respect to claim 48 Yamaguchi describes the method of claim 47, wherein the gate insulating layer and the gate comprise a thickness of about 500-1500 A and, about 1500-:2500 A, respectively. (Yamaguchi col. 8 lines 2 and 5).

With respect to claim 49 Yamaguchi describes the method of claim 41, wherein said hydrogen ions are implanted with implantation energy between about 50 and 150 KeV. (Yamaguchi col. 9 line 15).

With respect to claim 50 Yamaguchi describes the method of claim 41, wherein said hydrogen ions are implanted with a dose of between about 5×10^{14} - 5×10^{16} ions/cm² (Yamaguchi col. 9 line 14).

With respect to claim 51 Yamaguchi describes the method of claim 49, wherein said hydrogen ions are implanted to heat up the excited region to a temperature between about 200-300 degrees Celsius. (Yamaguchi col.9 line 15 and 54).

With respect to claim 52 Yamaguchi describes the method of claim 50, wherein said hydrogen ions are implanted to heat up the excited region to a temperature between about 200-300 degrees Celsius. (Yamaguchi col.9 line 15 and 54).

With respect to claim 53, Yamaguchi describes the method of claim 41, wherein said hydrogen ions are implanted in the active layer and simultaneously form the impurity region. (It is inherent when a dopant is implanted an impurity region is formed).

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With respect to claim 54, Yamaguchi describes the method of claim 41, wherein the hydrogen ion implantation time is proportionately related to the size of the active layer. (Inherent because bigger the area the longer it will take).

With respect to claim 55, Yamaguchi describes a thin film transistor prepared by a process comprising: forming a gate insulating layer on an active layer; forming a gate on the gate insulating layer; forming an excited region in an exposed portion of the active layer by implanting hydrogen ions to the active layer by using the gate as a mask; and forming an impurity region by heavily implanting impurity ions to said excited region while the excited region remains in an excited state, wherein the activation of said impurity ions implanted heavily occurs as the step of said implanting impurity ions is performed. (rejected for same reasons as claim 41 above).

With respect to claim 56 Yamaguchi describes the thin film transistor of claim 55, wherein the, gate insulating layer is formed by depositing silicon dioxide or silicon nitride on a glass substrate, and the active layer is formed by depositing undoped polycrystalline silicon. (rejected for same reasons as claim 42).

Response to Arguments

Applicant's arguments filed on 3/4/03 have been fully considered but they are not persuasive for the following reasons.

Applicants' first contention that Yamaguchi has other objectives than those stated in the instant specification is not persuasive because it is the claims that define the claimed invention and it is claims not specifications that are anticipated or unpatentable (Constant V Advanced Micro-devices Inc., 7 USPQ 2d 1064).

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Applicants' second contention that Yamaguchi teaches a post heat treatment that the instant application is trying to eliminate is also not persuasive because instant Application page 6 lines 16-32 describes similar steps. It is noted that this alleged difference is also not in the claims.

Applicants' third contention that the possibility of using chlorine ions would undesirably change the principle of operation of the present application is not persuasive because Yamaguchi and the claimed invention both describe the use of H ions and the fact that Yamaguchi also describes the use of Chlorine is not relevant to the obviousness of the recited claims which only recite H ions.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Steven H Rao whose telephone number is (703) 306-5945. The examiner can normally be reached on Monday- Friday from approximately 7:00 a.m. to 5:30 p.m.

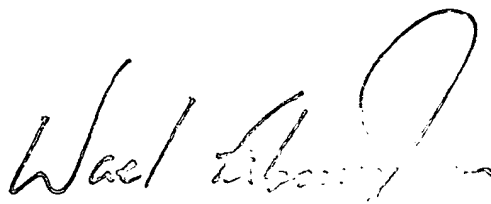
Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. The Group facsimile number is (703) 308-7724.



Steven H. Rao

Patent Examiner

May 06, 2003.



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